



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/816,667	04/02/2004	Joseph S. Heyman	0081632	9691
7590	03/24/2005			EXAMINER MARTIR, LILYBETT
Nixon & Vanderhye P.C. Attn: John Lastova 8th Floor 1100 N Glebe Road Arlington, VA 22201-4714			ART UNIT 2855	PAPER NUMBER

DATE MAILED: 03/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Ak

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>
	10/816,667	HEYMAN ET AL.
	<b>Examiner</b>	<b>Art Unit</b>
	Lilybett Martir	2855

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

**A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM  
 THE MAILING DATE OF THIS COMMUNICATION.**

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) Responsive to communication(s) filed on \_\_\_\_\_.
- 2a) This action is **FINAL**.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) Claim(s) 1-20 is/are pending in the application.
  - 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) 13-20 is/are allowed.
- 6) Claim(s) 1-12 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All    b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
     Paper No(s)/Mail Date 4/2/04.
- 4) Interview Summary (PTO-413)  
     Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: \_\_\_\_\_.

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-7, 9 and 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weaver et al. (Pat. 5,357,423) in view of Theller (Pat. 5,847,284).

- With respect to claim 1, Weaver teaches a wire bonding monitoring device (Col. 2, lines 19-21) including an ultrasonic phase locker 23; an ultrasonic transducer 21; a data recording device 41 to acquire data; and a computer device 32 to analyze data calculating certain bond strength parameters. Weaver does not disclose the provision of a loading device that is capable of applying stress-loads to the bond and a controller for controlling the loading device. Theller teaches a bond testing device that comprises stress-loads by means of elements 11,12,15,17 and 18 and a controller (Col. 6, lines 10-14) to control the loading device. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the teachings of the ultrasonic bonding device of Weaver et al. utilizing the teachings of the bond testing device of Theller by providing it with a loading device that is capable of applying stress-loads to the bond and a controller for

controlling the loading device to further facilitate the execution of more invasive testing in bonded specimens in a commonly known and efficient manner by loading the specimen that is to be tested.

- With respect to claims 2,3 and 10, Weaver teaches that the processor block 31 adjusts the oscillation frequency (Col. 4, lines 34-35), which is indicative of a pulse phase or oscillator loop.
- With respect to claim 4, Weaver teaches the phaselocker 23 is coupled to the bonded component via the ultrasonic transducer 21 (Note that the transducer 21 is joined to bonding tool element 22 which contacts the bonded component to actually bond it as noted in Figure 2).
- With respect to claims 5 and 11-12, Weaver fails to teach the bond strength tester being capable of altering a temperature of the bond. Theller et al. teaches a bond-testing device that comprises a structure capable of altering the temperature of the bond (Col. 8, lines 4-18). It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the teachings of the ultrasonic bonding device of Weaver et al. utilizing the teachings of the bond testing device of Theller by providing it with temperature altering means to further be capable of obtaining the most accurate and reproducible results (Col. 8, lines 8-11).
- With respect to claim 6, Weaver teaches a transducer 21 capable of converting electrical signals to acoustic waves and the inverse; a

phaselocker 23 that interfaces with the transducer, via a linked connection (Note how elements comprising the bonding device in Figures 2 and 3, including elements 23 and 21), through the input/output interface as in elements 25, 28 and 28' (Col. 5, lines 41-49 and 60-66). Weaver fails to teach a force reactor capable of being attached to at least a portion of the bonded component; a stressor capable of applying a force to the bonded component; a coupler, wherein the coupler couples the force reactor and the stressor, such that at least the stressor is capable of being actuated and/or manipulated by the controller to apply a force to the bonded component. Theller et al. teaches a bond testing device that comprises a force reactor as are elements 13 capable of being attached to at least a portion of the bonded component 2; a stressor 18 capable of applying a force to the bonded component 2; a coupler as are elements 11 and 12, wherein the coupler couples the force reactor 13 and the stressor 18, such that at least the stressor 18 is capable of being actuated and/or manipulated by the controller (Col. 6, lines 10-14) to apply a force to the bonded component. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the teachings of the ultrasonic bonding device of Weaver et al. utilizing the teachings of the bond testing device of Theller by providing it with a force reactor, a stressor and a coupler to further facilitate the execution of more invasive testing in bonded

specimens in a commonly known and efficient manner by loading the specimen that is to be tested.

With respect to claim 7, Weaver et al. teaches the transducer 21 being capable of generating a compressional or shear wave as a pulse, a tone burst, a continuous wave, or a guided wave (Col. 4, lines 22-25).

With respect to claim 9, Weaver et al. teaches an input/output interface as in elements 17 and 18, a data monitoring and acquisition circuit as in element 31, a memory as in element 41, an information data base as in element 32, and a controller 25.

3. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Weaver et al. in view of Theller as applied to claim 1 above and further in view of Tittmann et al. (Pat. 4,372,163).

With respect to claim 8, Weaver et al. fails to teach his transducer 21 including multiple transducers. Tittmann et al. teaches a property measurement device that comprises more than one transducer, as are elements 12 and 18. Since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art (St. Regis Paper Co. v. Bemis Co., 193 USPQ 8). It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the teachings of the ultrasonic bonding device of Weaver et al. utilizing the teachings of the bond testing device of Theller and further utilizing the teachings of the property measurement device of

Tittmann et al. by duplicating or increasing the number of transducers in order to make said device capable of performing more measurements and therefore obtain more accurate results.

***Double Patenting***

4. Claim 11 is objected to under 37 CFR 1.75 as being a substantial duplicate of claim 12. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

***Conclusion***

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lilybett Martir whose telephone number is (571)272-2182. The examiner can normally be reached on 9:00 AM to 5:30 PM.

6. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Max Noori can be reached on (571)272-2185. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2855

7. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LM

Lilybett Martir  
Examiner  
Art Unit 2855

LM



MAXNOORI  
PRIMARY EXAMINER